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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/656,613

09/04/2003

Joseph H. Johnson

2867-661

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EXAMINER

QUINTO, KEVIN V

ART UNIT

PAPER NUMBER

2826

MAIL DATE

DELIVERY MODE

02/15/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/656,613 | JOHNSON ET AL. | |
| | Examiner | Art Unit | |
| | Kevin Quinto | 2826 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-12, 14-19, 32, 33 and 42-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12, 14, 15, 17-19, 32, 33, and 42-50 is/are allowed.
- 6) ☒ Claim(s) 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Malhi (USPN 5,349,207) in view of Fellner (USPN 5,296,047).

In reference to claim 16, Malhi (USPN 5,349,207) discloses a similar structure. Figures 5a-5e of Malhi discloses a silicon carbide based Silicon structure comprising a Silicon Carbide substrate (30). A bonding layer (54, 56, 58) comprising a silicon germanium layer overlies the silicon carbide substrate (30). There is a single crystal silicon semiconductor material (20) having a top surface. The single crystal silicon semiconductor material (20) overlies the bonding layer (54, 56, 58). The single crystal silicon semiconductor material (20) is bonded to the silicon carbide substrate (30) via the bonding layer (54, 56, 58). Malhi makes it clear that the silicon carbide substrate (30) is to be of a conductivity type with a first dopant concentration since a semiconductor device is to be formed with it (claims 12 and 20). Malhi does not disclose the conductivity type of the silicon semiconductor material. However Fellner (USPN 5,296,047) discloses that n-type and p-type silicon substrates are well known materials in the semiconductor art. The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable

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to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore this limitation is not patentable over Malhi and Fellner. Malhi does not disclose the dopant concentration of the silicon semiconductor material. However:

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Thus claim 16 is not patentable over Malhi and Fellner.

Allowable Subject Matter

2. Claim 43 is allowed. Claims 9-12, 14, 15, 17-19, 32, 33, 42 and 44-50 were allowed in previous Office actions.
3. The following is a statement of reasons for the indication of allowable subject matter: the applicant has amended dependent claim 43 (of parent claim 42) to overcome the claim objection made in the previous Office action. The allowable subject matter of claims 9-12, 14, 15, 17-19, 32, 33, 42, and 44-50 was discussed in previous Office actions.

Response to Arguments

4. Applicant's arguments filed November 30, 2010 have been fully considered but they are not persuasive.

The applicant argues that the Malhi element (30) does not teach a substrate because it does not support anything and that the interpretation of the term "substrate" is not reasonable (p. 13). The examiner respectfully disagrees since Malhi refers to the silicon carbide substrate (30) as a wafer (column 4, lines 30-32). The applicant recognizes that wafers and substrates are equivalent structures in the currently filed specification (p. 21, lines 4-24, p. 21, lines 1-4). As for the argument that the Malhi structure is a converse of the claimed structure, the examiner maintains that the structure of Malhi constructed in view of Fellner is indistinguishable from the claim 16 structure since it is simply a matter of mere orientation. Flipping over the structure of Malhi constructed in view of Fellner or the claim 16 structure does not render either of them inoperable. The applicant further argues that the Malhi structure is akin to that characterized by the specification where the prior art does not disclose "growing Silicon or bonding it to Silicon Carbide." However claim 16 is solely directed to a structure and not to its fabrication method. Therefore claim 16 stands rejected above under 35 U.S.C. 103(a) as being unpatentable over Malhi (USPN 5,349,207) in view of Fellner (USPN 5,296,047).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Quinto/
Examiner, Art Unit 2826

/Minh-Loan T. Tran/
Primary Examiner
Art Unit 2826